Date Due

Meter Installations
and
Meter Rates

By E. I. ROBERTS
ASSISTANT ENGINEER

STATE OF OHIO
DEPARTMENT OF HEALTH
COLUMBUS

THE LIBRARY OF THE
JUN 13 1924
UNIVERSITY OF ILLINOIS

COLUMBUS, OHIO:
THE F. J. HEER PRINTING CO.
1923
Bound at State Bindery.

628.17
Oh3m

THE LIBRARY OF THE

JUN 13 1924

UNIVERSITY OF ILLINOIS

Meter Installations and Meter Rates

By E. I. Roberts, *Assistant Engineer*
Ohio State Department of Health

A study of meter rates and meter installations was undertaken by the State Department of Health of Ohio, as a result of a large demand for information on this subject by officials of Ohio cities and villages. This demand was brought about by the increased cost in the operation of water works.

The study indicates that for cities and villages of Ohio with services 100 per cent metered, the average daily consumption is 90 gallons per capita and for cities and villages with no metered services, the average daily consumption is 170 gallons per capita. The average domestic rate in Ohio for surface water supplies filtered is slightly higher than the average domestic rate for well water supplies, while the average manufacturing rate for filtered water is slightly less than the average manufacturing rate for well water supplies.

In comparing the water consumptiton of cities and villages with and without metered services and in predicting how much metering will reduce the water consumption many factors must be taken into consideration. The more important of these factors are the use of water for manufacturing purposes, the use of private industrial water supplies, the use of private wells for domestic purposes, the condition of the distributing system, the character of the water, the extent to which a city or village is sewered and the cost of water. For a lack of definite information on these many factors, we have not attempted to draw any definite conclusion as to how much water consumption might be reduced by complete metering but have simply recorded the consumption as we have found it in the various cities and villages.

One cannot conclude that the rates as they exist in Ohio indicate that filtered water is necessarily more expensive than well water since the installation of water purification plants has generally been more recent than the installation of well water supplies. As a result rates for filtered water have been increased in some instances to meet the cost of installation rather than the cost of producing water. We, therefore, cannot draw any definite conclusion from these rates but must simply state the rates as they are found to exist.

In making a study covering such a large number of cities and villages (150) as we have included in our list for study, it has been necessary to rely largely upon the cooperation of the officials connected with the various water works under consideration. For the most part, we have had the full and hearty cooperation of these officials.

Information for this study was obtained from three sources; viz.: inforamtion blanks sent out to each water works official; monthly reports on the operation of water purification plants, and records of investigations made by representatives of the State Health Department.

The largest amount of information was obtained from blanks sent out to water works officials. Each official was asked to furnish information on the following items:

1. Total number of all services.
2. Total number of metered services.
3. Is metering compulsory?
4. Meter reading (monthly or quarterly)
5. Meters owned by
6. Meters maintained by
7. Meters installed by
8. Cash deposit required

Meter Rates	*Cents per thousand gallons*
1. *Domestic rate* (Averaging less than 25,000 gallons per month)	.....
2. *Intermediate rate* (Averaging between 25,000 and 250,000 gallons per month)	.....
3. *Manufacturing rate* Averaging more than 250,000 gallons per month)	.....
Minimum Annual Meter Rate (5/8-inch connection)	

SUMMARY OF DATA ON METERED SERVICES

Item	Domestic	Intermediate	Manufacturing	Total
Number of metered services..				
Total amount of water supplied (millions of gals.)...				
Total amount of revenue derived (dollars)				
Water consumption—(Water pumped per 24 hours in gals.)				

In most instances all of the first eight questions were answered completely. Under the item, Meter Rates, most of the officials either filled in the blank spaces or submitted a schedule of rates with the information blank.

Under the table, "Summary of Data on Metered Services," the first item, "number of metered services," was filled in more completely than any of the other items in this table, but the information obtained, indicated that the different types of services, especially intermediate and manufacturing were often confused. This was evidenced in the reports of the smaller cities and villages where often the number of manufacturing services, if they really existed, based on a use of 250,000 gallons or more per month, would exceed the total water consumption of the city or village. However, this item does give some indication of the number of industries using the public water supply for manufacturing purposes.

Under the second and third items, little information was secured and in our tables no consideration was given to them.

The question of water consumption was omitted on the first blanks sent out but was included on a second list which was sent to all cities and villages having well water supplies. Consumption for cities and villages with water purification plants was obtained from the monthly reports of operation received by the State Health Department.

It has been the practice of the Division of Sanitary Engineering where possible, to secure inforamtion regarding water consumption and meter installations on each investigation that is made in the field. In this way we have secured some data which otherwise would not be available.

For purposes of comparison, cities were divided into six classes, A, B, C, D, E, and F.

Class A representes all cities with a population of 50,000 or more regardless of the type of supply.

Class B represents cities with populations from 15,000 to 50,000 and which purify water by filtration.

Class C represents cities with populations from 15,000 to 50,000 which secure their water supplies from wells.

Class D represents cities with populations from 5,000 to 15,00 which purify water by filtration.

Class E represents cities with populations from 5,000 to 15,000 which secure their water supplies from wells.

Class F represents cities with populations from 5,000 to 15,000 which obtain water from a surface supply which is not treated in a water purification plant.

Villages were divided into classes, G and H.

Class G represents villages with populations from 2,000 to 5,000 which purify water by filtration.

Class H represents villages with populations from 2,000 to 5,000 which secure their public water supply from wells.

The eight classes include all of the cities in Ohio and all of the villages having public water supplies and populations from 2,000 to 5,000.

The data obtained have been compiled in three tables and include in addition to the information asked for on the blanks sent out, the type of supply and the population served. These tables are the most valuable part of our study on meter installation and meter rates.

A study of these tables indicates the general effect of metering on water consumption. This is graphically shown in Plates I and II where consumption in gallons per capita per day is plotted against per cent of services metered. The graph shows that the average daily consumption for 100 per cent metered cities and villages in Ohio is 90 gallons and the average daily consumption for cities and villages without meters is 170 gallons. Plotting a curve for cities alone, we find the average daily consumption for 100 per cent metered cities to be 100 gallons per capita and 170 gallons per capita for cities without meters. The lowering of the consumption curve when cities and villages are plotted together is probably due to the lack of sewerage systems in many of the villages.

A summary of the average rates for the various classes of cities and villages together with the average consumption and average per cent metered is shown in Table I.

Table I

Class	Average Consumption—(Gals. per capita per day)	Services Metered—(Per cent)	Rates—Cents Per Thousand Gallons			
			Domestic	Intermediate	Manufacturing	Min. Annual
A	115	91	15	13	11	8.07
B	120	68	32	19	13	9.15
C	105	78	22	16	14	7.18
D	130	63	37	21	13½	12.20
E	105	63	29	21	15	9.28
F	145	43	23	11	12	7.23
G	95	95	71 (48)	30	23	10.72
H	105	63	41½	28	25	8.88

NOTES — The average consumption for each class is a weighted average according to populations of various municipalities.

The percentage of services metered is obtained by dividing the number of metered services by the total number of services for each class.

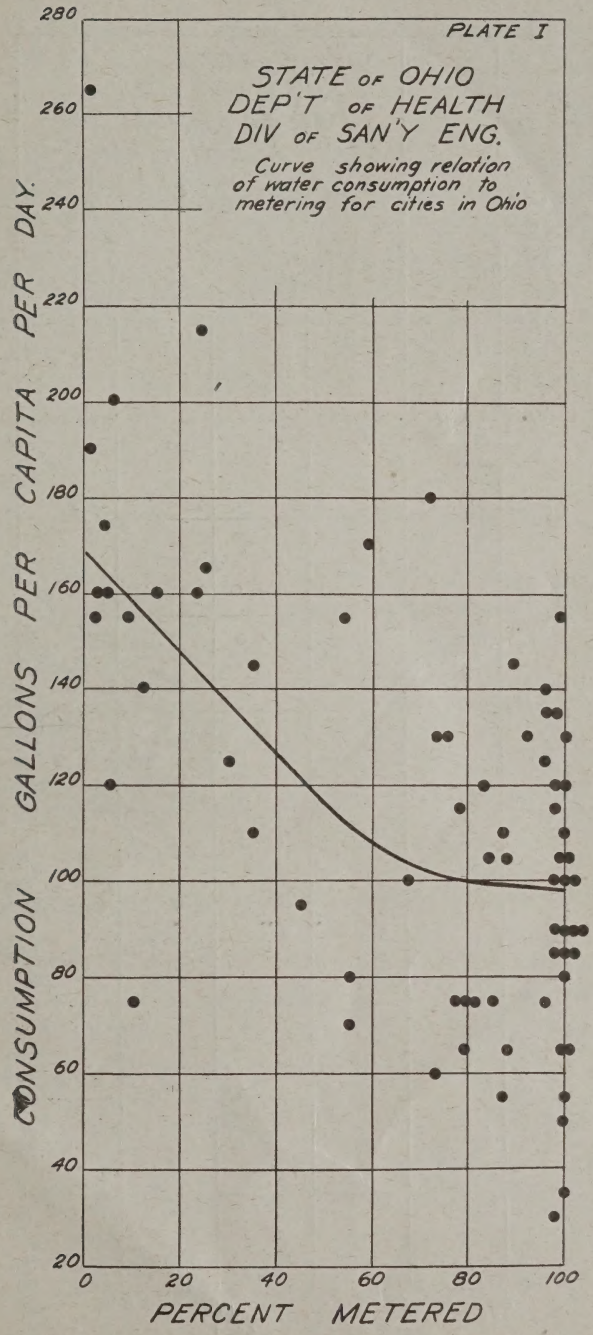
PLATE I
STATE OF OHIO
DEP'T OF HEALTH
DIV OF SAN'Y ENG.
Curve showing relation of water consumption to metering for cities in Ohio
CONSUMPTION GALLONS PER CAPITA PER DAY.
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
20
40
60
80
100
PERCENT METERED

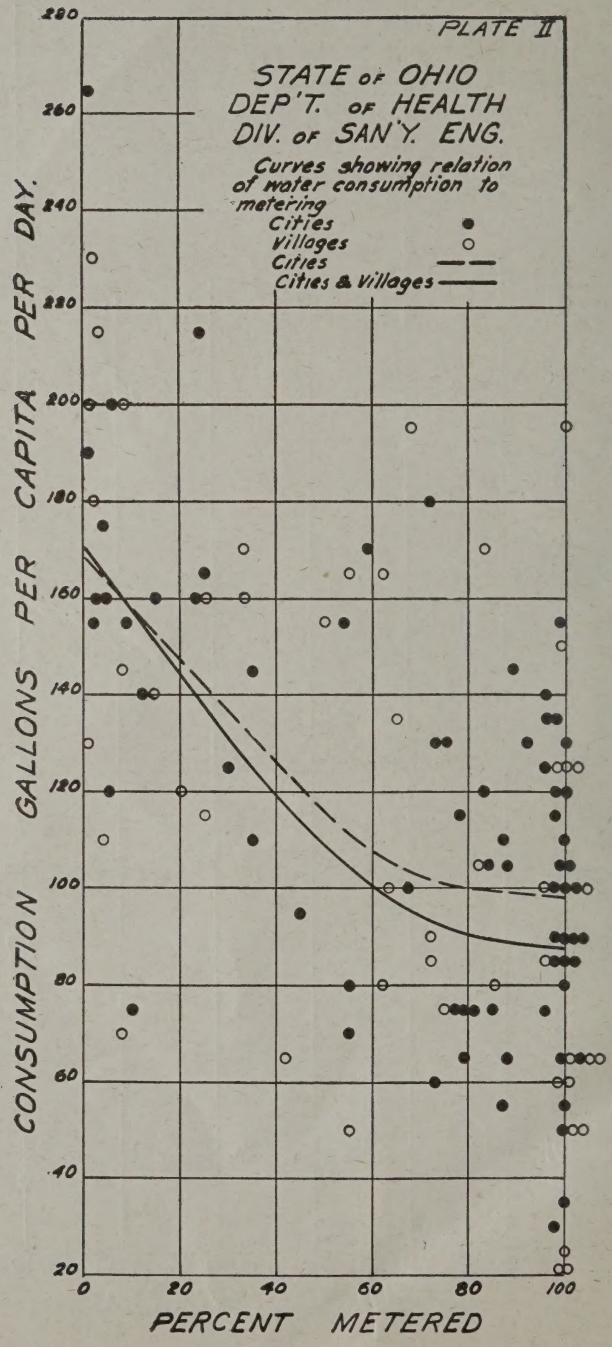
PLATE II
STATE OF OHIO
DEP'T. OF HEALTH
DIV. OF SAN'Y. ENG.
Curves showing relation of water consumption to metering
Cities
Villages
Cities
Cities & Villages
CONSUMPTION GALLONS PER CAPITA PER DAY.
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
20
40
60
80
100
PERCENT METERED

It will be noted from this table that the larger the city the lower the average cost of water per thousand gallons, and that the average cost of filtering water as indicated by the rates for domestic use is slightly higher than for well water supplies without filteration. However, the average cost of filtered water for manufacturing purposes is slightly lower than the cost of well water for manufacturing purposes. In the column marked, domestic rate, class G, it will be noted that the rate of seventy-one cents is exceptionally high. This is due to the rate charged by one village alone which if omitted would bring the domestic rate down to forty-eight cents per thousand gallons making it comparable with water obtained from wells for villages in the same class.

THE LIBRARY OF THE
JUN 13 1924
UNIVERSITY OF ILLINOIS

DATA ON METER INSTALLATIONS AND METER RATES FOR OHIO CITIES WITH POPULATIONS ABOVE 15000

Compiled by DEPARTMENT OF HEALTH, STATE OF OHIO December 1922.

Class	Municipality	Type of Supply	Population 1920	Consumption Gallons per Capita	Services						Meters						Meter Rates				
					Total Number	Number Metered	Percent Metered	Domestic	Intermediate	Manufacturing	Compulsory	Installed by	Owned by	Maintained by	Cash Deposit req'd	Reading	cents per M gallons Domestic	Intermediate		Manufacturing		Minimum Annual Charge 5/8 Meter
A	Akron	F	208435	75	38684	31237	81	29200		2037	Yes	City	City	City	No	Q	21	21	20	20	16	#14.40
	Canton	W	87091	120	21092	18115	83	17995		120	Yes	City	City	City	No	Q	11		9		8	8.00
All Cities	Cincinnati	F	401247	115 *	65142	64000	98				Yes	Con.	Con.	Con.	No	M	16		16		16	4.80
with Populations	Cleveland	F	796841	135 *	115121	111037	96				Yes	City	City	City	No	Q	8		8		8	6.00
above 50000	Columbus	SF	237031	90 *	40232	39786	99	37148		2638	Yes	Con.	Con.	City	No	SA	16		15⅔		14⅔	4.80
	Dayton	W	152559	105	38851	32552	84	31900		488	Yes	City	City	City	No	Q	12	10	8	8	6	6.60
	Springfield	W	60840	170	13500	8000	59	5800	2000	200	No	City	Con.	City	No	M	10		10	10	6	4.00
	Toledo	F	243164	105	52840	46250	88	44856		7984	Yes	City	Con.	Con.	Yes	M	13		12	12	7	9.60
	Youngstown	SF	132358	90	22458	22458	100	22224	195	39	Yes	City	Con.	Con.	No	Q	27	20	13	13	11	14.40
B	Ashtabula	F	22082	155	5140	5134	99				Yes	Con.	Con.	Con.	Yes	Q	29	24	16		12	6.00
	East Liverpool	F	21411	160	4700	700	15				No	Con.	Con.	Con.	No	Q	67-56	35	10		10	10.66
Cities with	Elyria	F	20474	130 *	5000	5100	100	4910	150	40	Yes	City	City	City	Yes	Q	37		30	24	15	15.20
Filter Plants	Lima	F	41326	105	8500	8475	99	8350	50	75	Yes	City	C&C	City	No	Q	20		14		13	12.00
and Populations	Lorain	F	37295	110	7100	6175	87	6100		75	No	City	City	City	Yes	Q	27	20	12		12	3.00
from 15000	Newark	SF	26718	80	5615	5615	100	5547	57	11	Yes	City	Con	City	No	Q	24	24	17	17	11	6.00
to 50000	Portsmouth	F	33011	120 *	7850	358	5	177	123	58	No	Con.	Con.	City	No	Q	25	20	15	15	10	6.00
	Sandusky	F	22897	165 †	5700	5600	98	5580		20		City	Con.	City	No	M&Q	17	17	8		8	10.00
	Steubenville	F	28508	155	5500	575	9	540		35	Yes	Con.	Con	Con.	No	Q	55	40	13		13	8.00
	Warren	F	27050	75	6578	6298	96	6029	489	60	Yes	City	City	City	No	Q	40-27	27	16		16	10.80
	Alliance	F	21603	125	5400	1600	30	1300	222	80	No	City	City	City	No	Q	19		12		11	13.00
C	Barberton	W	18811	65	3100	3000†	97†				Yes	City	City	City	No	Q	30-20		20		20	12.00
	Findlay	W	17021	105	4158	4090	100	4002	79	9	Yes	City	City	City	No	M	29-27	27	20		20	7.80
Cities with	Hamilton	W	39675	115	9175	7300	78	6500	600	200	Yes	City	C&C	City	No	M	16		14		12	7.60
Well Supplies	Mansfield	W	27824	100	6542	6542	100	6497	45	45	Yes	City	City	City	No	SA	27	27	20	20	11	6.00
and Populations	Marion	W	27891	85	5500	5500	100				Yes	Co	Co	Co	No	Q	25		10		9	10.00
from 15000	Massillon	W	17428	75	4700	3600	77				Yes	Co	Co	Co	Yes	Q	29		23		15	6.00
to 50000	Middletown	W	23594	85	4600	4500	98	4473		27	Yes	City	City	City	No	Q	15	13	9		9	5.40
	Norwood	W	24966	110	4950	4950	100	4900		50	Yes	Con.	Con.	Con.	No	Q	13		13		13	4.80
	Zanesville	W	29569	160	8300	300	4	200		100	No.	Con.	Con.	City	No	M	24		10		10	5.00
AVERAGES																						
A	9 Cities	W&F		115			91										15	13		11		8.07
B	11 Cities	F		120			68										32	19		13		9.15
C	9 Cities	W		105			78										22	16		14		7.18

Key: F = Filtration
SF = Softening plant
W = Well Supply
Co = Company
Con = Consumer
M = Monthly
Q = Quarterly
SA = Semi-annually
* = Based on population of city and of nearby municipalities served by city.
† = Water waste survey reduced this figure from 165 to 135 in 1922
A&B = Consumption for Class A & B based on average for 1921.
C = Consumption for Class C based on figures obtained from City for 1922.
Domestic Rate = 25000 gallons or less per month.
Intermediate Rate = 25000 to 250000 gallons per month.
Manufacturing Rate = 250000 gallons per month or over.

Ci
Ci
Filte
and
from
to
C
Well
and
from
to
Sa
pl
an
fr
t

DATA
ON

METER INSTALLATIONS AND METER RATES

FOR

OHIO CITIES WITH POPULATIONS FROM 5000 TO 15000

Compiled by DEPARTMENT OF HEALTH, STATE OF OHIO December 1922

Class	Municipality	Type of Supply	Population 1920	Consumption Gallons per Capita	Services						Meters						Meter Rates cents per M. gallons						Minimum Annual Charge 5/8 Meter
					Total Number	Number Metered	Percent Metered	Domestic	Intermediate	Manufacturing	Compulsory	Installed by	Owned by	Maintained by	Cash Deposit required	Reading	Domestic		Intermediate		Manufacturing		
D	Ashland	F	9249	65							No	City	City	City	No	M&Q	25	38	17	10		10	27.00
	Bellaire	F	15061	200	2182	125	6				Yes	Co.	Co	Co	Yes	M		44	36	8		8	12.00
Cities with Filter Plants and Populations from 5000 to 15000	Bucyrus	F	10425	125	2394	2300	96				Yes	Con.	Con.	Con	No	Q		50	35	10		10	10.00
	Cambridge	F	13104	120	2530	2500	98	2450	25	25	Yes	Con.	Con.	Con	No	Q		40	40	25	20	12	16.00
	Conneaut	F	9343	190	2347	1700	72				No	City	Con.	City	No	M&Q		30	27	20	13	8	10.00
	Defiance	SF	8876	75	1324	1054	80	749	271	34	Yes	Con.	City	City	No	Q		49	39	27		15	12.00
	Delaware	SF	8756	130	2046	1876	92	1788	67	21	Yes	Co.	Co.	Co.	No	M&Q		45	40	20		12	10.00
	Dennison & Uhrichsville	F	11949	140	2706	2660	96	2628	44	31	Yes	Co.	Co.	Co.	Yes	Q		25		20		15	6.00
	East Youngstown	F	11237	36	900	900	100	900			Yes	City	Con.	City	No	Q		30	25	19		18	
	Ironton	F	14007	190			0+										30	25	25	15	12	9	6.00
	Marietta	F	15140	145	3900	1350	35	1875	50	25	No	City	City	City	No	Q	40	10	10	6		6	10.00
	Niles	F	13080	175	2600	110	4				Yes	City	City	City	No	M		30	24	16	15	11	8.88
	Painesville	F	7272	90	2150	2150	100	2127	17	6	Yes	City	City	City	Yes	Q		50	45	20		20	15.00
	Pomeroy & Middleport	F	8068	95	1490	688	45	630		8	No	Co	Co	Co		Q	65	28		23		12	12.00
	Ravenna	F	7219	140	1975	244	12	164	57	23	No	City		C&C	No	M&Q		53	45	35		27	15.20
	Tiffin	W&F	14375	65	3506	2782	79	1730	1036	26	Yes	Co	Co	Co	Yes	Q							
E	Athens	W	6418	155	1750	950	54	932	12	6	Yes	City	City	City	No	SA		30		16		9	7.00
	Bellefontaine	W	9336	215	2403	578	24	488	64	26	No	City	City	City	Yes	2M		25		20		15	8.00
Cities with Well Supplies and Populations from 5000 to 15000	Bowling Green	W	5788	85	1230	881	72	866	12	3	No	Con.	Con.	Con.	No	Q		40	40	35	35	30	10.00
	Chillicothe	W	15831	70	3600	1972	55	1510	414	48	No	Co.	Co.	Co	No	M		30		17		15	6.00
	Circleville	W	7049	80	1485	835	55	747	70	8	No	Co.	Co.	Co	No	Q		30		25		10	
	Coshocton	W	10847	150																			
	Cuyahoga Falls	W	10200	50	2050	2050	100	2044	4	2	Yes	City	City	City	Yes	Q		21	20	16		11	12.00
	Delphos	W	5745	70																			
	Dover	W	8101	155	2041	65	3	10	40	15	No	City	City	City	No	SA	25	20	15	7		6	10.00
	East Palestine	W	5750	110	1500	500	33	390	100	10	No	City	Con.	Con	No	Q	25	15		10		8	1.00
	Galion	W	7374	60	2010	1477	73	1454		23	Yes	City	Con.	City	No	Q	38	36	32	16	16	13	18.00
	Gallipolis	W	6070	100	1100	700	63	700			No	City	Con	Con	No	Q		18½	18½	12½		12½	15.00
	Girard	W	6556	60	1100																		
	Greenville	W	7104	75	2130	1801	85	1546	230	25	No	City	City	City	No	Q	20	13		13		13	8.00
	Jackson	W	5842	130	882	598	75	538	50	10	No	Co.	Co.	Co.	No	Q	80	30		30		30	16.00
	Kenmore	I W	12683	65	2612	2512	100	2500	5	7	No	City	City	City	No	Q	30	20	20	12		12	12.00
	Kent	W	7070	85	1520	1520	100	1520			Yes	Co.	Co	Co	No	Q	88	26		14		14	9.00
	Kenton	W	7690	110	1850	650	35	625		25	No	Con.	Con.	Con.	Yes	Q		40		18		13	8.00
	Lancaster	W	14706	100	2612	2517	97	2193	300	24	Yes	Con.	Con.	Con.	No	M		16		8		8	3.00
	Logan	W	5493	160	1300	35	3	28		7	No	Con.	Con.	Con.	No	SA		40		40		20	
	Martins Ferry	W	11634	230	2650	56	2	27		29	No	Con.	Con	Con	No	Q		25	20	10	10	2½	
	Mt Vernon	W	9237	135			65																
	Nelsonville	W	6440	125																			
	New Philadelphia	W	10718	55	2525	2210	87	2200		10	No	Con.	Con.	Con	No	Q	28	23	23	12	11½	9	
	St. Bernard	W	6312	160																			
	St. Mary's	W	5679	80	1445	890	62				No	City	City	Con.	No	SA		30	30	27	20	7	9.00
	Salem	W	10305	100	2763	1864	68				No	City	City	Con	No	Q	1	62		56		37	
	Shelby	I W	5578	195	1294	1152	89	1134		18	No	City	Co.	Co.	No	M&Q		30		22¼		15	12.00
	Sidney	W	8390	90	1850	1850	100				Yes	Co.	City	City		Q	39	27	27	14		14	8.00
	Troy	W	7260	125	1910	1910	100	1865	23	22	Yes	City	City	City	No	Q	20	10	8	7		7	12.00
	Urbana	W	7621	160	1800	436	24				No	City	Con.	City	No	SA	25	10		10		10	6.00
	Van Wert	W	8100	50	1820	1803	35				No	City	City	City	No	Q		35	35	15		15	7.00
	Wapakoneta	W	5295	65	1112	1112	100	1109	3	0	Yes	City	City	City	No	Q	38	17		11		11	5.00
	Washington C.H	W	7962	115	1600	400	25	373		27	No	Co.	Co.	Co.	No	M	30	25	25	20		20	13.00
	Wilmington	W	5037	30	785	778	99	729		49	Yes	Co	Co	Co	No	M		25		25		25	10.00
	Wooster	W	8204	120																			
	Xenia	I W	9110	90	2300	1648	72	1623	13	9	Yes	City	Con	City	Yes	Q		32	29	24		16	11.00
F	Bellevue	SS	5776	130	1750	1300	75										40	10	10	09	8	6	8.00
	Fostoria	S	9987	100	2258	2258	100	2185	44	29	Yes	Con	Con	Con	No	M&SA		20		20	12	7	12.00
Cities with Surface Supplies Unfiltered and Populations from 5000 to 15000	Fremont	S	12468	120	3000	3000	100	2970		30	Yes	City	City	City	No	Q		12	10	6		6	6.00
	Norwalk	SS	7379	160	2500	600	24	500		100	No	Con.	City	City		SA		20		15	12½	10	6.00
	Piqua	S	15044	265	4100	0	0																
	Struthers	SS	5847	40																		35	
	Toronto	S	4684	200			1			2												9	6.40
	Wellston	SS	6687	75	1198	188	10	112		10	No	Con	Con	Con	No	M&Q	40	10		10		9	6.40
	Wellsville	S	8849	140	2100	12	6			12	No	City	City	City	No	Q		35				10	5.00
AVERAGES																							
D	16 Cities	F		130			63											37		21		13½	12.20
E	37 Cities	W		105			63											29		21		15	9.28
F	9 Cities	S		145			43											23		11		12	7.23

Key: F Filtration
SF Softening Plant
W Well Supply
I Iron Removal Plant
S Surface Supply without filtration
SS Surface Supply with storage reservoir
Co. Company
Con. Consumer
M Monthly
Q Quarterly
SA Semi-annually
a Based on population of city and nearby municipalities served by city
Domestic Rate 25000 gallons or less per month
Intermediate Rate 25000 to 250000 gallons per month
Manufacturing rate 250000 gallons per month or over

THE LIBRARY OF THE
JUN 13 1924
UNIVERSITY OF ILLINOIS

DATA
ON
METER INSTALLATIONS AND METER RATES
FOR
OHIO VILLAGES WITH POPULATIONS FROM 2000 to 5000

Compiled by DEPARTMENT OF HEALTH, STATE OF OHIO December 1922.

Class	Municipality	Type of Supply	Population 1920	Consumption Gallons per Capita	Services: Total Number	Services: Number Metered	Services: Percent Metered	Meters: Domestic	Meters: Intermediate	Meters: Manufacturing	Meters: Compulsory	Meters: Installed by	Meters: Owned by	Meters: Maintained by	Meters: Cash Deposit req'd	Meters: Reading	Meter Rates (cents per M. gallons): Domestic	Meter Rates: Intermediate	Meter Rates: Manufacturing	Minimum Annual Charge 5/8" Meter
G	Barnesville	F	4865	50	1003	1003	100	950	3	50	Yes	V	V	V	No	Q	75	50	10	13.00
	Berea	F	2959	130			1+													
Villages with	Eaton	F&W	3210	75	975	735	75	725	5	5	No	V	V	V	Yes	Q	35	25	25	12.00
Filter Plants	Geneva	F	3081	125	950	950	100	945		5	Yes	V	V	V	Yes	Q	30 22	22 14	14	5.00
and Populations	Medina	SF	3430	65	920	896	88	882		14	Yes	V	V	Con.	No	Q	47	27 16	16	13.20
from 2000	Napoleon	F	4143	125	1005	1000	99	975		25	Yes	V	V	V	Yes	Q	29 11	11	11	12.00
to 5000	Oberlin	SF	4236	70																
	Port Clinton	F	3928	170	1146	940	82	936		4	Yes	V	Con.	Con.	No	Q	20	17 11	9	10.00
	Sebring	F	3341	115																
	Upper Sandusky	F	3708	50	910	910	100				Yes	Co.	Co.	Co.	Yes	Q	50	17	10 7	
	Wauseon	F	3035	65	900	892	99	881		11		Con.V	Con.			Q	300	53	51	12.00
	Wellington	F	2245	60	331	326	99	320		6	Yes	V	V	V	Yes	Q	25 20	20 10	10 5	10.00
	Willoughby	F	2656	150	800	795	99	783	4	8	Yes	V	Con.	V	No	Q	40 18	18 10	10	8.00
	Woodsfield	F	2394	65	338	338	100	320	14	4	Yes	Con.	Con.	Con.	No	M	110 100	100 90	90	12.00
H	Ada	W	2321		488	466	95	465		1	Yes	Co.	Co.	Co	Yes	Q	44 27	27	27	13.32
	Bradford	W	2356	25	378	378	100	353	25	0	Yes	V	V	Con.	Yes	SA	44 17	17	17	10.50
Villages with	Bryan	W	4252	100	900	875	97				Yes	V	V	V	Yes	Q	30 8	8	8	8.00
Well supplies	Cadiz	W	2084	135	600	300	50	300			No	V	V	V	No	Q	100 33	33	33	9.00
and Populations	Carey	W	2488	180	550	12	2	3		9	No	V	Con.	Con.	No	Q	10	10	10	8.00
from 2000	Carrollton	W	2192	115																
to 5000	Celina	W	4226	70	756	65	8													
	Chagrin Falls	W	2237																	
	Clyde	W	3098		503	15	3		9	6	No	V	V	V	No	M	15			6.00
	Columbiana	W	2114																	
	Crestline	W	4313	105	875	730	83	715	9	6	Yes	V	V	V	No	Q	50	25 20	15 10	12.00
	Franklin	W	3071	145	700	72	10	58	7	12	No	Con.	Con.	Con	No	Q	15 12	12 8	8	5.00
	Gloustar	W	3140	20	300															
	Greenfield	W	4344		485	485	100													
	Hicksville	W	2378																	
	Hillsboro	W	4356	85	968	910	94	910			Yes	Con.	Con.	Con.	No	Q	115 45	30	25	
	Hubbard	W	3220	65																
	Lebanon	W	3396	120	1000	200	20													
	Lisbon	W	3113		710	710	100				Yes	V	Con	V	No	Q	53 47	33	33	12.00
	London	W	4080	200	1825	130	7	100	20		No	Co.	Co.	Co	No	Q	40 35	35 25	25	12.00
	Louisville	W	2008																	
	Lowelsville	W	2219	15	250	250	100	250			Yes	V	Con.	V	No	Q	40	40	40	
	Marysville	W	3635		1100	50	5				No	Con.	Co.	Con.	Yes	Q	25	25 10	7	5.00
	Maumee	IW	3195																	
	Miamisburg	W	4383																	
	Millersburg	W	2098	215	532	16	3				No	V	V	V	No	M	10	10	10	0.0
	Minarra	W	2261	90																
	Mingo Jct.	W	4616	65	722	318	42	250	65	0	No	Co.	Co.	Co	No	Q	40	35 10	10	9.00
	Montpelier	W	3052	195	930	690	74	675	10	5	Yes	V	V	V	No	Q	25	15	6	8.00
	New Comerstown	W	3387																	
	New Lexington	W	3157																	
	North Baltimore	W	2439	80	320	270	85	262		8	Yes	Co	Co	Co	No	Q	37½	20	20	
	Orrville	W	4107	195	1100	1100	100	1100			Yes	V	V	V	No	Q	33	15	15	
	Ottawa	W	2167																	
	Oxford	W	2146	165	698	425	62	425			No	V	V	V	No	MQ				12.60
	Paulding	W	2106		635	635	100	634		1	Yes	V	Con.	Con.	Yes	Q	50 35	25	25	12.00
	Perrysburg	S	2429																	
	Reading	W	4540		725	725	100													
	Saline Ville	W	2700	75							Yes	V	Con	V	No	Q	53	40 27	27	
	Shadyside	W	3084	20	700	700	100	700			Yes	V	Con.	Con.	No	Q				
	Tippecanoe City	W	2426	165	719	407	57	350		57	No	Con.	Con	Con.	No	SA	14 12	10 9	7	10.00
	Wadsworth	IW	4742	100	1358	1356	100	1350		4	No	V	Con.	V	No	Q	35	35	35	—
	Westerville	W	2480	60	720	720	100	690	30		Yes	V	V	V	Yes	Q	250 175	175	175	8.00
	Willard	W	3889		975	975	100				Yes	V	V	V	No	SA	20 10	10	10	
	Wyoming	W	2323	* 55	550	550	100				Yes	V	Con	V	Yes	Q	33 20	20	20	8.00
AVERAGES																				
G	14 Villages			95			95										71	30	23	10.72
H	45 Villages			105			63										41½	28	25	8.88

Key: F = Filtration
SF = Softening Plant
W = Well Supply
I = Iron Removal Plant
S = Surface supply without filtration
Co = Company
Con = Consumer
V = Village
M = Monthly
Q = Quarterly
SA = Semi-annually
* = Based on population of village and nearby municipalities served by village.
Domestic Rate = 25000 gallons or less per month.
Intermediate Rate = 25000 to 250000 gallons per month.
Manufacturing Rate = 250000 gallons per month or over

UNIVERSITY OF ILLINOIS – URBANA
N3011208863875 1A